

The Lunar X-ray Observatory (LXO)



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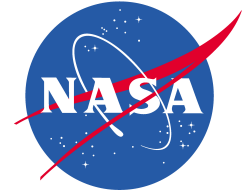
Tim Stubbs
UMBC

Kip Kuntz
Johns Hopkins University

Tom Cravens
Ina Robertson
University of Kansas

Steve Sembay
Jenny Carter
Andy Read
University of Leicester

Pavel Travnicek
Academy of Sciences of
the Czech Republic

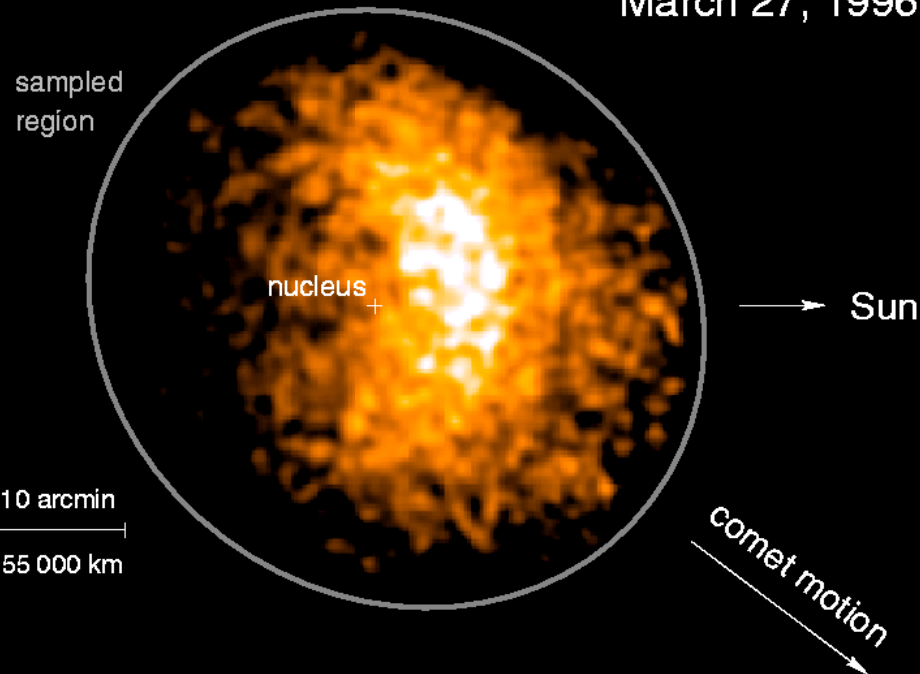


X-ray Emission from Comets

FIRST X-RAY IMAGE OF A COMET

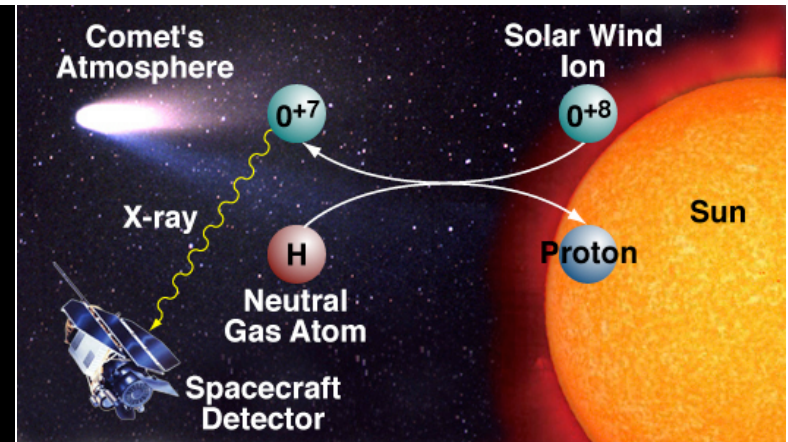
Comet Hyakutake • C/1996 B2 ROSAT HRI

March 27, 1996



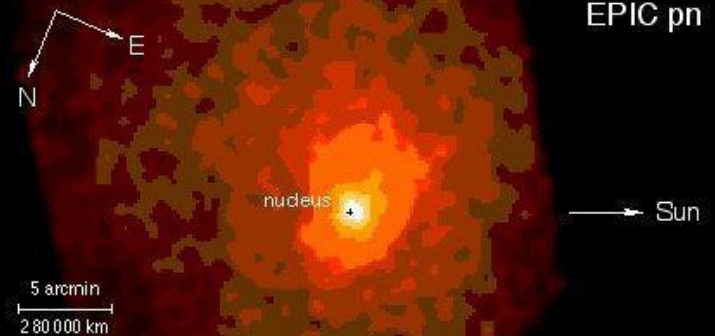
C. Lisse, M. Mumma, NASA GSFC

K. Dennerl, J. Schmitt, J. Englhauser, MPE



Comet McNaughtHartley C/1999 T1

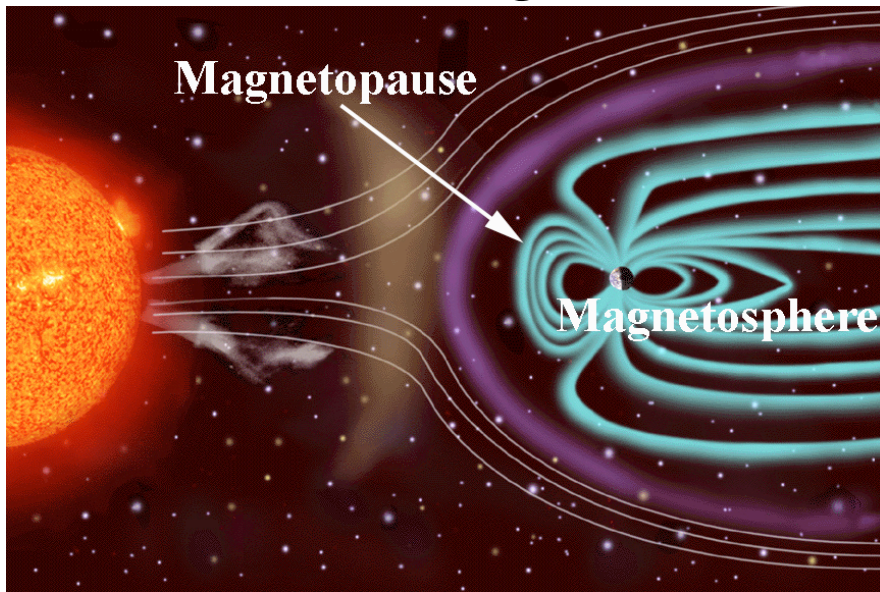
XMMNewton
EPIC pn



E = 0.2-1.0 keV

Jan 29-30, 2001

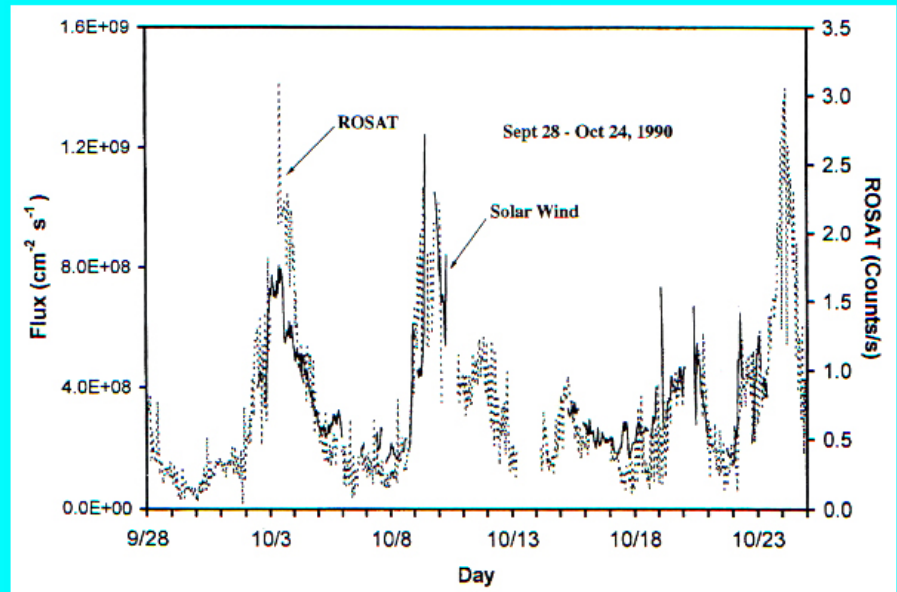
Seeing the Solar Wind in Soft X-rays



The effect of the solar wind on the Earth's magnetosphere creates space weather.

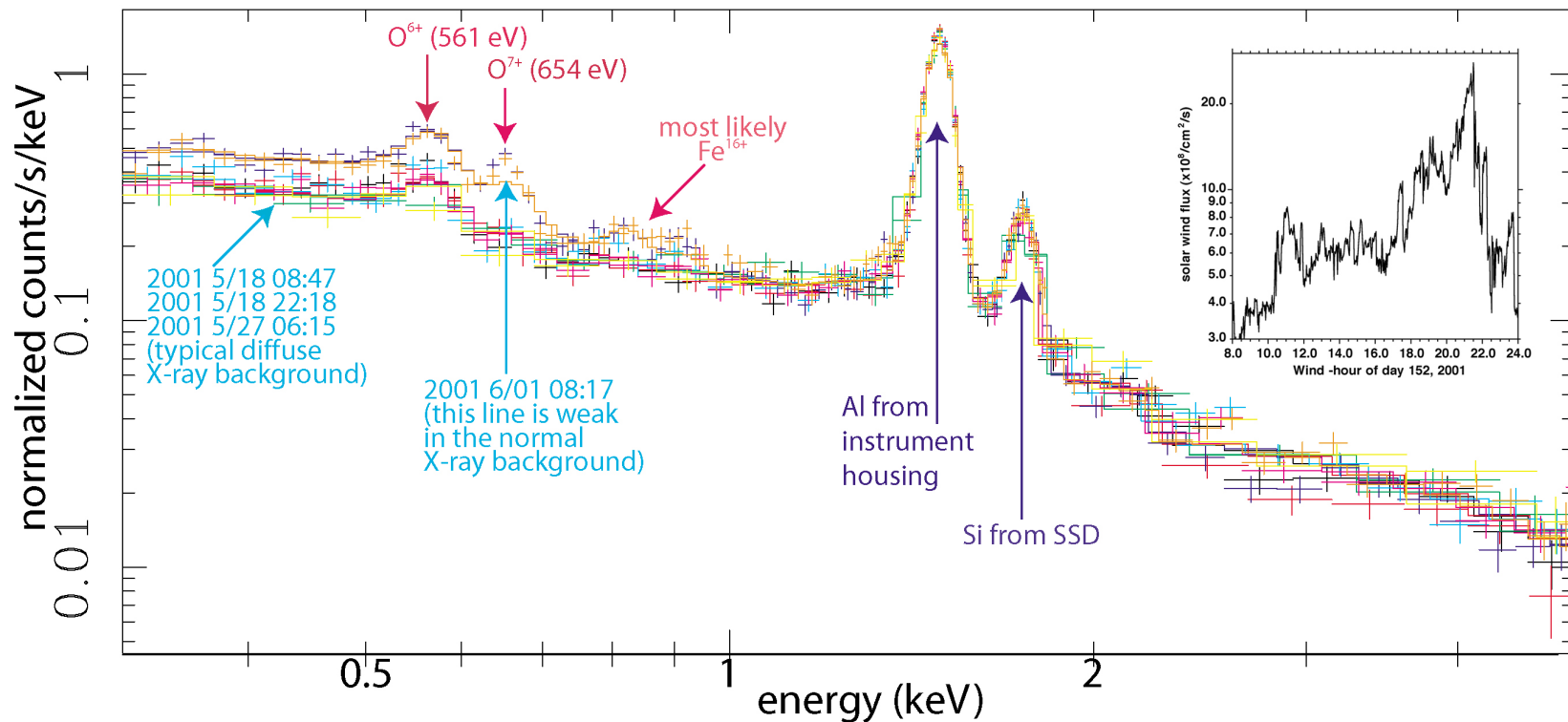
The ROSAT All-Sky Survey soft X-ray flux is strongly correlated with the solar wind flux

Cravens, Robertson and Snowden, JGR, 106, 24,883, 2001



XMM Observations of Solar Wind Lines

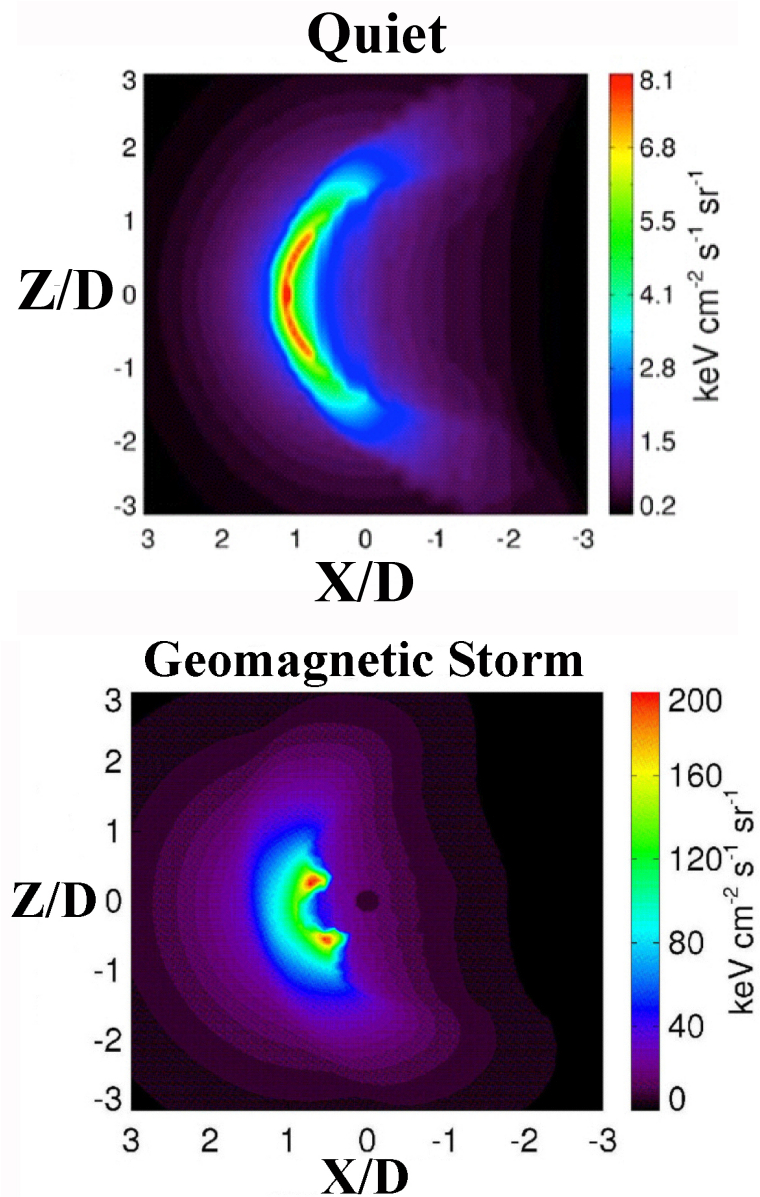
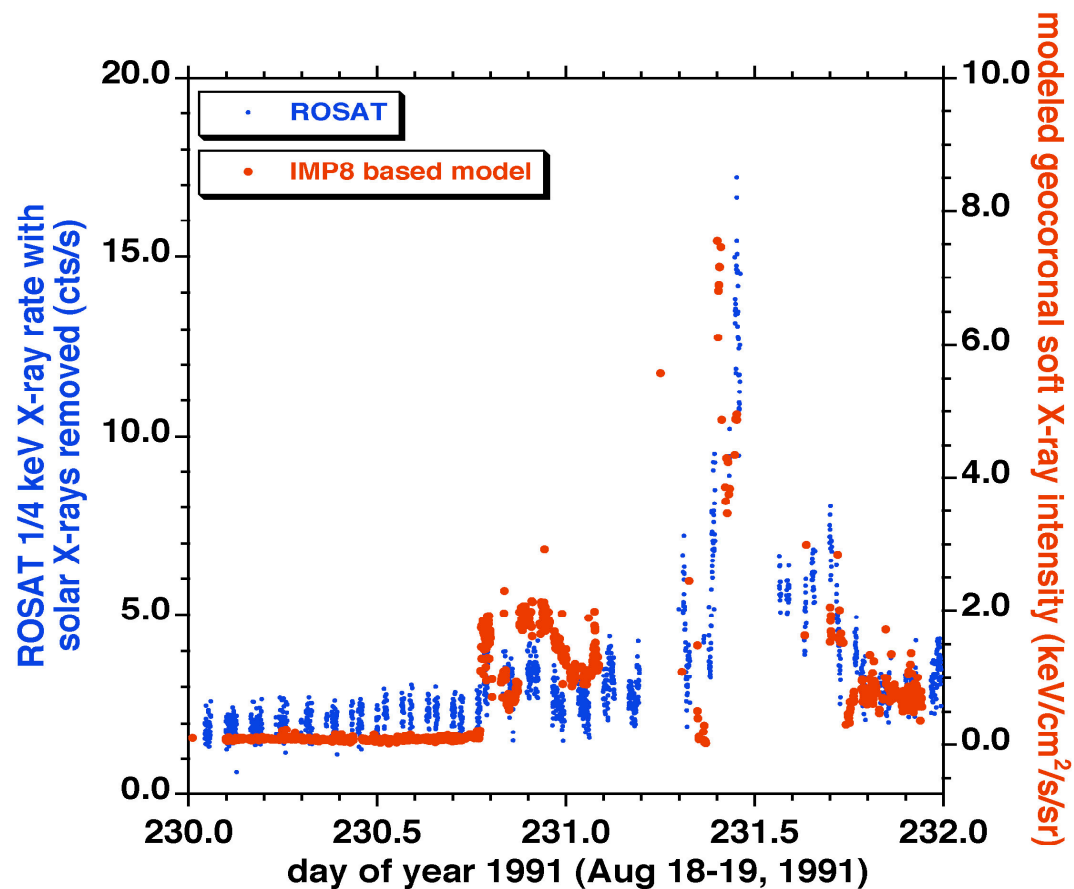
HDF North Diffuse Background



Snowden, Collier and Kuntz, *Astrophys. J.*, 610 (2), 1182, 2004

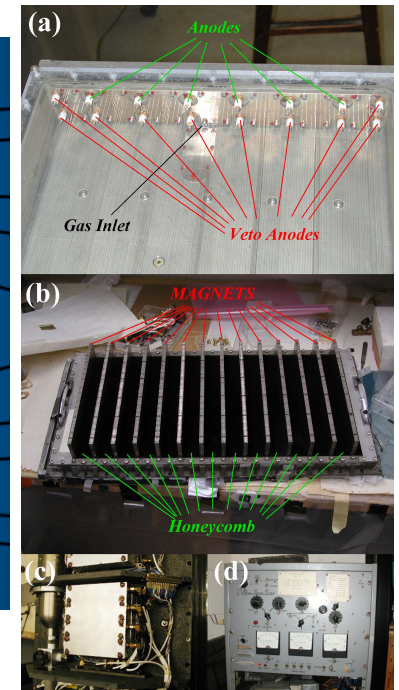
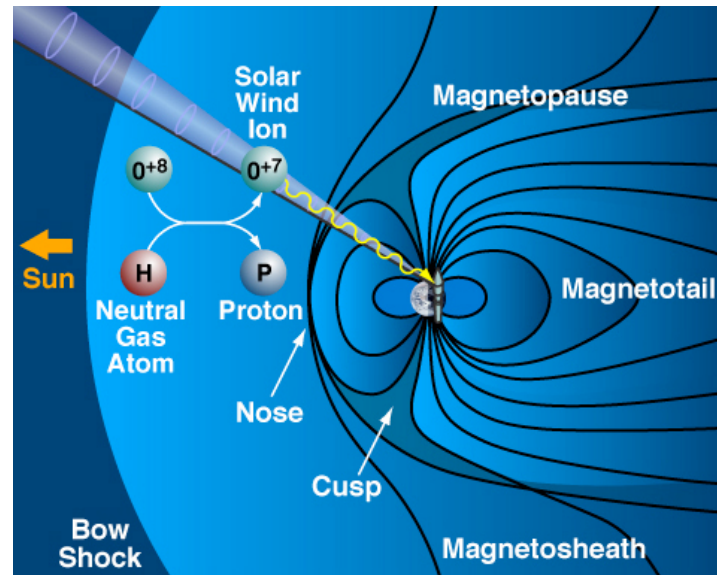
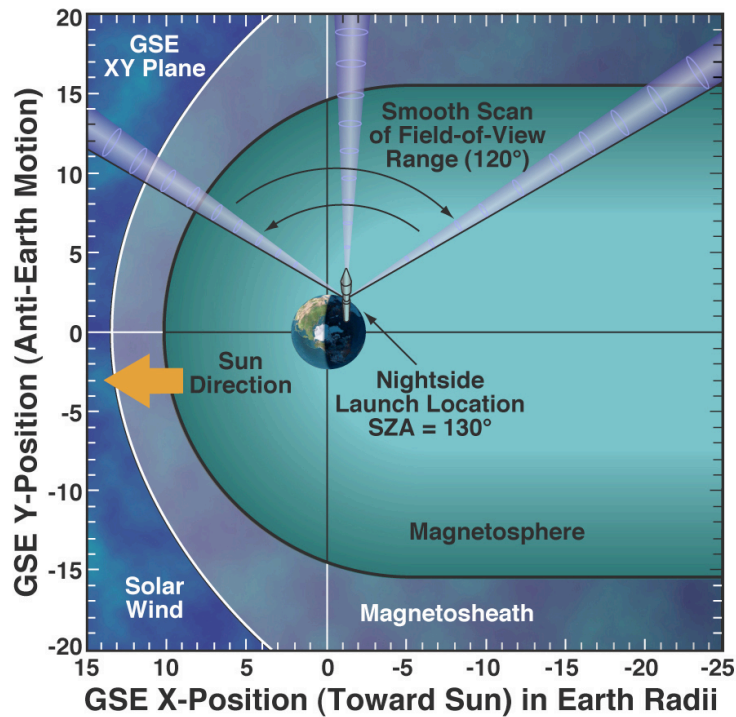
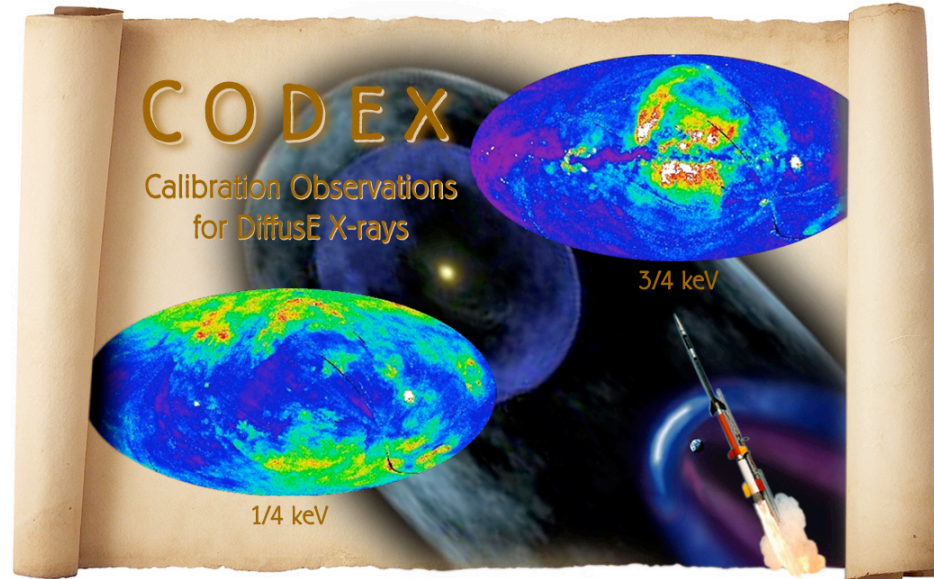
Collier, Moore, Snowden and Kuntz, *Adv. Space Res.*, 35 (12), 2157, 2005

Solar Wind-Magnetosphere Interaction

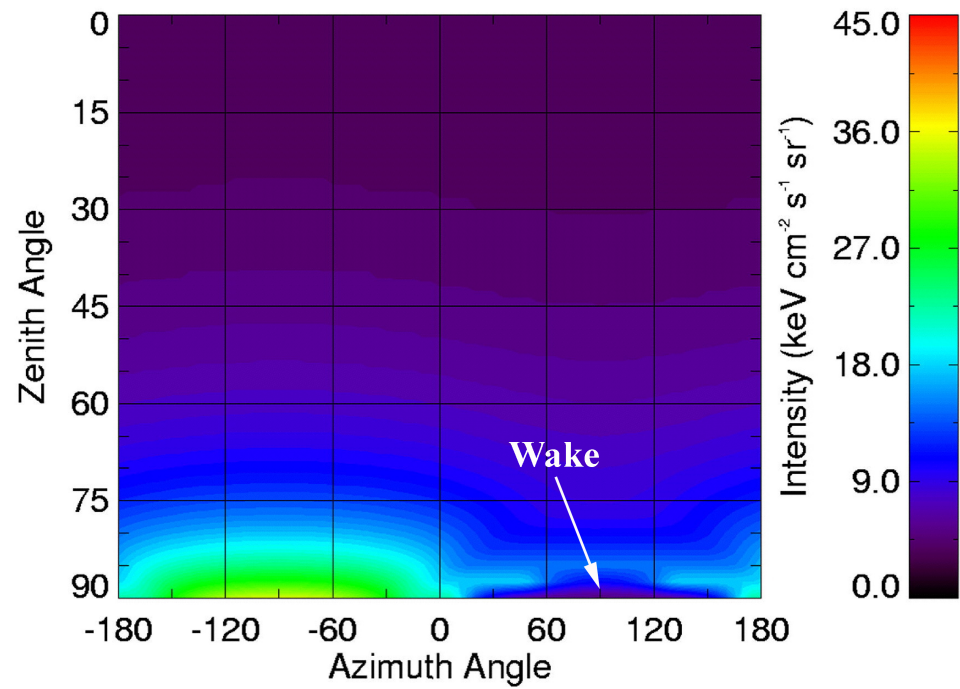
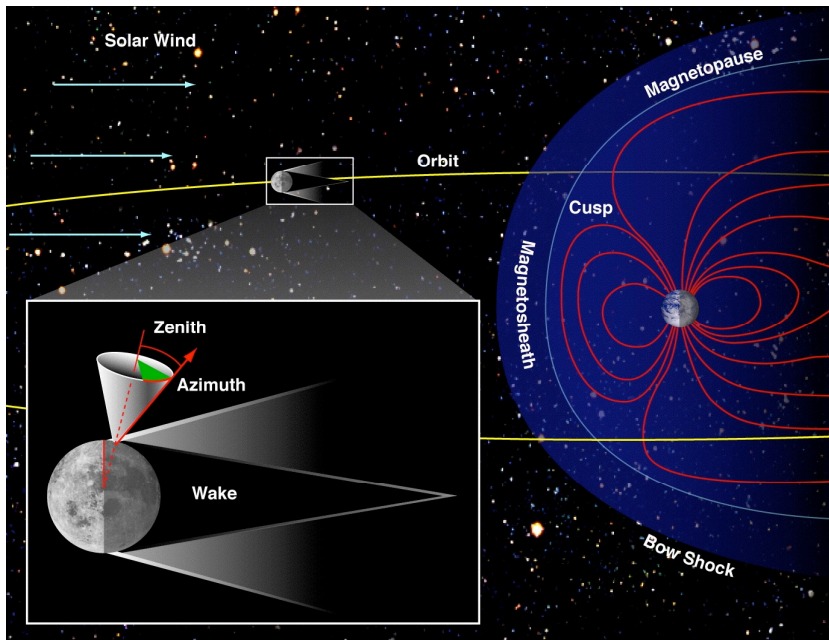
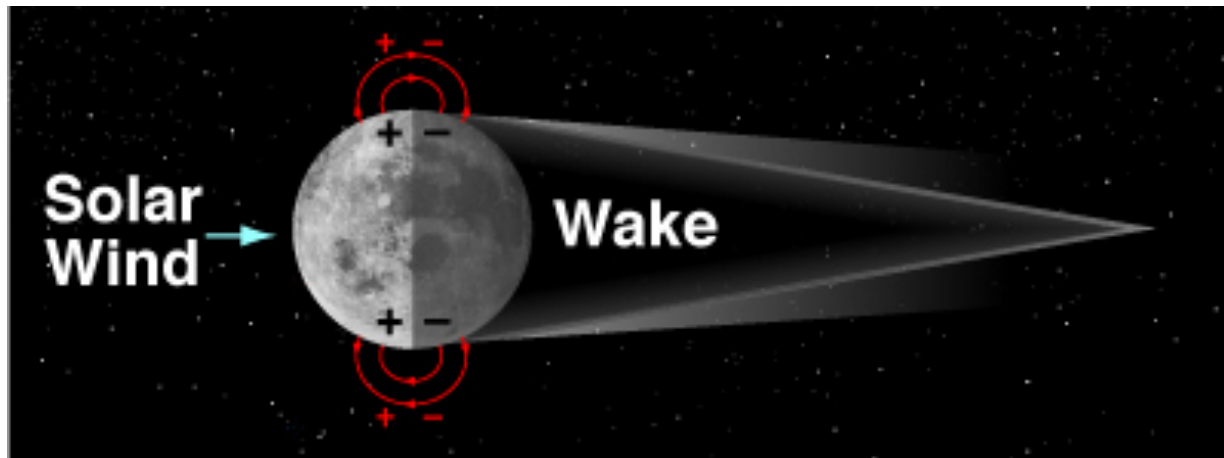


Robertson, Collier, Cravens and Fok,
J. Geophys. Res., 111, A12105,
2006.

CODEX - Calibration Observations for DiffusE X-rays



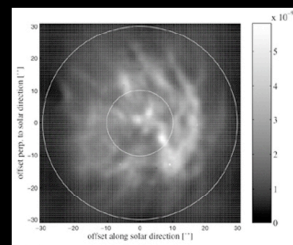
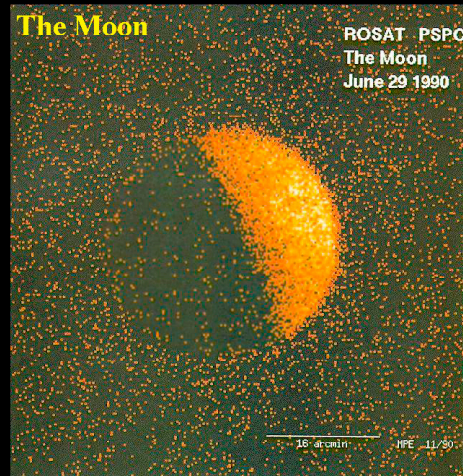
Solar Wind Interaction with the Moon's Atmosphere



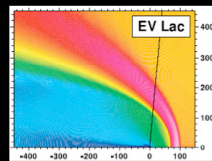
Science and Exploration Application

Lunar-Based Soft X-ray Observations...

Enabling Exploration Science:

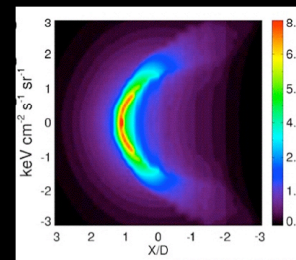


Mars



And Beyond

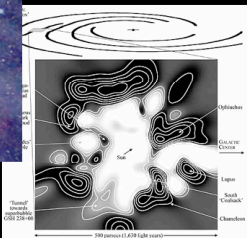
Science Enabled by Exploration:



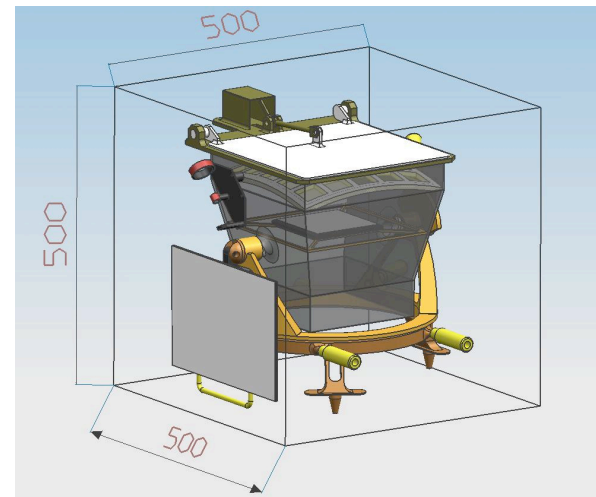
Solar Wind Interaction

Heliospheric Science

Local Bubble



ALSEP on lunar surface



One possible LXO concept